WHAT IS CLAIMED IS:

1. A method for controlling at least one computing element with a universal console (UC), comprising:

storing a user's preferences for the universal console;

selecting a computing element to control with the UC;

receiving by the UC a canonical user interface (UI) representation of the computing element's UI;

instantiating a concrete UI by the UC taking into account the stored user preferences; selecting at least one action-command to be carried out by the computing element;

transmitting to the computing element said data associated with said at least one action-command using a remote procedure call mechanism.

- 2. A method according to claim 1, wherein said selecting at least one action-command includes requesting information about the state of said at least one computing element.
- 3. A method according to claim 1, further comprising interacting with at least one group hierarchy to obtain data in connection with said selected at least one action-command to be carried out by the computing element.
- 4. A method according to claim 1, wherein said storing includes storing data indicating at least one disability of the user.
 - 5. A method according to claim 1, further including carrying out said action-command by said computing element.
 - 6. A method according to claim 1, further including receiving by the UC notifications from the computing element.

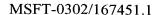
- 7. A method according to claim 6, wherein said notifications include at least one of an error message, warning message, status update message and state change.
- 8. A method according to claim 1, wherein said canonical UI representation is formatted according to an XML stream.
 - 9. A method according to claim 1, further including requesting a list of available devices that may be controlled by UC.
- 10 10. A method according to claim 1, wherein communications between said UC and said computing element are made via Hypertext Transfer Protocol (HTTP).
 - 11. A method according to claim 1, wherein said computing element is one from the group of a computing device and an application.
 - 12. A method according to claim 1, wherein said remote procedure call mechanism makes calls according to SOAP (Simple Object Activation Protocol).
 - 13. A method according to claim 1, wherein said canonical UI representation includes a representation associated with a parameter for choosing one element *a* from a set *A*.

- 14. A method according to claim 1, wherein said canonical UI representation includes a representation associated with a parameter for selecting a subset A' from a set A.
- 25 15. A method according to claim 1, wherein said canonical UI representation includes a representation associated with a parameter for selecting one from the group of True/False, Off/On, OK/Cancel and Yes/No.

- 16. A method according to claim 1, wherein said canonical UI representation includes a representation associated with a parameter for selecting an integer n in the range n_1 through n_2 , with increment δ .
- 5 17. A method according to claim 1, wherein said canonical UI representation includes a representation associated with a parameter for selecting a real number x in the range x1 through x2, with increment δ.
- 18. A method according to claim 1,wherein said canonical UI representation includes a representation associated with a parameter type for an arbitrary string s.
 - 19. A method according to claim 18, wherein said arbitrary string s is to be selected from a suggestion set of strings S.
 - 20. A method according to claim 1, wherein said canonical UI representation includes a representation associated with a parameter type for the modification of a given first string s, resulting in a second string s.
 - 21. A method according to claim 1, wherein said canonical UI representation includes a representation associated with a parameter type for ordering the elements of set A into A.
 - 22. A method according to claim 1, wherein said canonical UI representation includes a representation associated with a parameter type for pairing set A elements with set B elements.
- 23. A method according to claim 1, wherein said canonical UI representation includes a representation associated with a group construct that contains at least one of commands and subgroups.

- 24. A method according to claim 1, wherein said canonical UI representation includes a representation associated with a command construct that specifies at least one action to send to the controlled element that will carry out the action-command.
- 25. A method according to claim 24, wherein said canonical UI representation includes a description of the parameters associated with the at least one action.

- 26. A computer readable medium bearing computer executable instructions for carrying out the method of claim 1.
 - 27. A modulated data signal carrying computer executable instructions for use in implementing the method of claim 1.
 - 28. A data structure formatted according to extensible markup language (XML) including data representative of a canonical UI description of a device to be controlled for use by a universal console.
 - 29. A data structure according to claim 28, wherein said canonical UI description includes a representation associated with a parameter for choosing one element a from a set A.
 - 30. A data structure according to claim 29, wherein said canonical UI description includes a representation associated with a parameter for selecting a subset A' from a set A.
- 25 31. A data structure according to claim 28, wherein said canonical UI description includes a representation associated with a parameter for selecting one from the group of True/False, Off/On, OK/Cancel and Yes/No.



- 32. A data structure according to claim 28, wherein said canonical UI description includes a representation associated with a parameter for selecting an integer n in the range n_1 through n_2 , with increment δ .
- 5 33. A data structure according to claim 28, wherein said canonical UI description includes a representation associated with a parameter for selecting a real number x in the range x1 through x2, with increment δ.
- 34. A data structure according to claim 28, wherein said canonical UI description includes a representation associated with a parameter type for an arbitrary string s.
 - 35. A data structure according to claim 34, wherein said arbitrary string s is to be selected from a suggestion set of strings S.
 - 36. A data structure according to claim 28, wherein said canonical UI description includes a representation associated with a parameter type for the modification of a given first string s, resulting in a second string s.

- 37. A data structure according to claim 28, wherein said canonical UI description includes a representation associated with a parameter type for ordering the elements of set A into A'.
- 38. A data structure according to claim 28, wherein said canonical UI description includes a representation associated with a parameter type for pairing set A elements with set B elements.
- 25 39. A data structure according to claim 28, wherein said canonical UI description includes a representation associated with a group construct that contains at least one of commands and subgroups.

- 40. A data structure according to claim 28, wherein said canonical UI description includes a representation associated with a command construct that specifies at least one action to send to the controlled element that will carry out the action-command.
- 41. A data structure according to claim 40, wherein said canonical UI description includes a description of the parameters associated with the at least one action.
- 42. A computer system wherein a user controls at least one computing element, said system comprising:

at least one computing element each having a canonical user interface (UI) description associated therewith; and

a universal console (UC) for controlling said at least one computing element and storing user preferences therein;

wherein a computing element of said at least one computing element communicates its associated canonical UI to said UC,

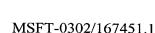
wherein said UC generates a concrete UI description from said canonical UI and said stored user preferences, and

wherein a user thereafter utilizes said UC to control said computing element via said concrete UI by selecting at least one action-command.

- 43. A computer system according to claim 42, wherein said selecting at least one action-command includes requesting information about the state of said at least one computing element.
- A computer system according to claim 42, wherein a user of said UC interacts with at least one group hierarchy to obtain data in connection with said selected at least one action-command to be carried out by the computing element.

5

- 45. A computer system according to claim 42, wherein said storage of user preferences includes the storage of data indicating at least one disability of the user.
- 46. A computer system according to claim 42, wherein said at least one computing element carries out said at least one action-command.
 - 47. A computer system according to claim 42, wherein said UC receives notifications from the at least one computing element.
- 48. A computer system according to claim 47, wherein said notifications include at least one of an error message, warning message, status update message and state change.
 - 49. A computer system according to claim 42, wherein said canonical UI description is formatted according to an XML stream.
 - 50. A computer system according to claim 42, wherein said selecting at least one action-command includes requesting a list of available devices that may be controlled by UC.
 - 51. A computer system according to claim 42, wherein communications between said UC and said computing element are made via Hypertext Transfer Protocol (HTTP).
 - 52. A computer system according to claim 42, wherein said computing element is one from the group of a computing device and an application.
- 25 53. A computer system according to claim 42, wherein said remote procedure call mechanism makes calls according to SOAP (Simple Object Activation Protocol).
 - 54. A computer system according to claim 42, wherein said canonical UI description includes a description associated with a parameter for choosing one element a from a set A.



- 55. A computer system according to claim 42, wherein said canonical UI description includes a description associated with a parameter for selecting a subset A' from a set A.
- 5 56. A computer system according to claim 42, wherein said canonical UI description includes a description associated with a parameter for selecting one from the group of True/False, Off/On, OK/Cancel and Yes/No.
- 57. A computer system according to claim 42, wherein said canonical UI description includes a description associated with a parameter for selecting an integer n in the range n_1 through n_2 , with increment δ .
 - 58. A computer system according to claim 42, wherein said canonical UI description includes a description associated with a parameter for selecting a real number x in the range x1 through x2, with increment δ .
 - 59. A computer system according to claim 42, wherein said canonical UI description includes a description associated with a parameter type for an arbitrary string s.
 - 60. A computer system according to claim 59, wherein said arbitrary string s is to be selected from a suggestion set of strings S.
 - 61. A computer system according to claim 42, wherein said canonical UI description includes a description associated with a parameter type for the modification of a given first string s, resulting in a second string s.

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62. A computer system according to claim 42, wherein said canonical UI description includes a description associated with a parameter type for ordering the elements of set A into A'.

- 63. A computer system according to claim 42, wherein said canonical UI description includes a description associated with a parameter type for pairing set A elements with set B elements.
- 5 64. A computer system according to claim 42, wherein said canonical UI description includes a description associated with a group construct that contains at least one of commands and subgroups.
- 65. A computer system according to claim 42, wherein said canonical UI description includes a description associated with a command construct that specifies at least one action to send to the controlled element that will carry out the action-command.
 - 66. A computer system according to claim 65, wherein said canonical UI description includes a description of the parameters associated with the at least one action.